

# PC703V

## High Collector-emitter Voltage Type Photocoupler

※ Lead forming type (I type) and taping reel type (P type) are also available. (PC703VI/PC703VP)(Page 656)

※TUV (VDE0884) approved type is also available as an option.

### Features

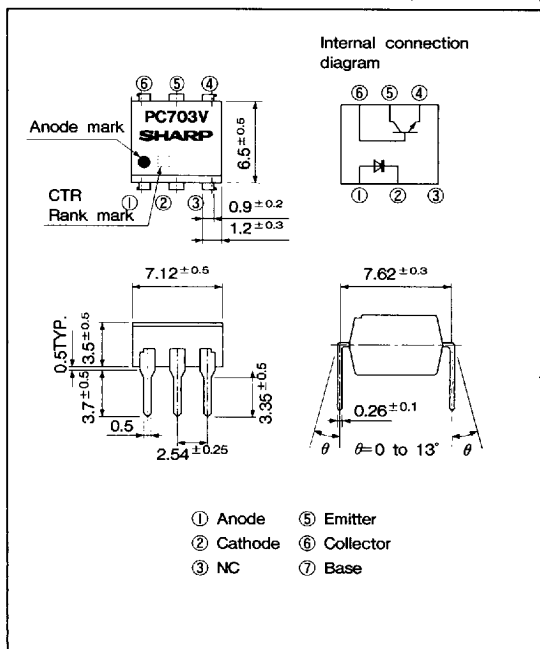
1. High collector-emitter voltage ( $V_{CEO} : 70V$ )
2. High isolation voltage between input and output  
( $V_{iso} : 5\,000V_{rms}$ )
3. TTL compatible output
4. Recognized by UL, file No. E64380,

### Applications

1. Telephone sets, telephone exchangers
2. System appliances, measuring instruments
3. Signal transmission between circuits of different potentials and impedances

### Outline Dimensions

(Unit : mm)



### Absolute Maximum Ratings

( $T_a = 25^\circ C$ )

Parameter	Symbol	Rating	Unit
Forward current	$I_F$	50	mA
*1 Peak forward current	$I_{FM}$	1	A
Reverse voltage	$V_R$	6	V
Power dissipation	$P$	70	mW
Collector-emitter voltage	$V_{CEO}$	70	V
Emitter-collector voltage	$V_{ECO}$	6	V
Collector-base voltage	$V_{CBO}$	70	V
Emitter-base voltage	$V_{EBO}$	6	V
Collector current	$I_C$	50	mA
Collector power dissipation	$P_C$	160	mW
Total power dissipation	$P_{tot}$	200	mW
*2 Isolation voltage	$V_{iso}$	5 000	$V_{rms}$
Operating temperature	$T_{opr}$	-30 to +100	$^\circ C$
Storage temperature	$T_{stg}$	-55 to +125	$^\circ C$
*3 Soldering temperature	$T_{sol}$	260	$^\circ C$

\*1 Pulse width  $\leq 100\,\mu s$ , Duty ratio = 0.001

\*2 40 to 60%RH, AC for 1 minute

\*3 For 10 seconds

8180798 0011675 5T7

"In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that occur in equipment using any of SHARP's devices, shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest version of the device specification sheets before using any SHARP's device."

371

## ■ Electro-optical Characteristics

(Ta = 25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	$V_F$	$I_F = 20\text{mA}$	—	1.2	1.4	V
	Peak forward voltage	$V_{FM}$	$I_{FM} = 0.5\text{A}$	—	—	3.0	V
	Reverse current	$I_R$	$V_R = 4\text{V}$	—	—	10	$\mu\text{A}$
	Terminal capacitance	$C_t$	$V = 0, f = 1\text{kHz}$	—	30	250	pF
Output	Collector dark current	$I_{CEO}$	$V_{CE} = 20\text{V}, I_F = 0, R_{BE} = \infty$	—	—	$10^{-7}$	A
Transfer characteristics	*4 Current transfer ratio	CTR	$I_F = 10\text{mA}, V_{CE} = 5\text{V}, R_{BE} = \infty$	40	—	320	%
	Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_F = 20\text{mA}, I_C = 1\text{mA}, R_{BE} = \infty$	—	0.1	0.2	V
	Isolation resistance	$R_{ISO}$	DC500V, 40 to 60%RH	$5 \times 10^{10}$	$10^{11}$	—	$\Omega$
	Floating capacitance	$C_f$	$V = 0, f = 1\text{MHz}$	—	0.6	1.0	pF
	Cut-off frequency	$f_c$	$V_{CE} = 5\text{V}, I_C = 2\text{mA}$ $R_L = 100\Omega, R_{BE} = \infty, -3\text{dB}$	—	80	—	kHz
	Response time	Rise time	$V_{CE} = 2\text{V}, I_C = 2\text{mA}$ $R_L = 100\Omega, R_{BE} = \infty$	—	4	15	$\mu\text{s}$
		Fall time		—	3	15	$\mu\text{s}$

\*4 Classification table of current transfer ratio is shown below.

Model No.	Rank mark	CTR (%)
PC703V1	A	40 to 80
PC703V2	B	63 to 125
PC703V3	C	100 to 200
PC703V4	D	160 to 320
PC703V5	A or B	40 to 125
PC703V6	B or C	63 to 200
PC703V7	C or D	100 to 320
PC703V	A, B, C or D	40 to 320

Measurement conditions

 $I_F = 10\text{mA}$  $V_{CE} = 5\text{V}$  $T_a = 25^\circ\text{C}$ 

Fig. 1 Forward Current vs. Ambient Temperature

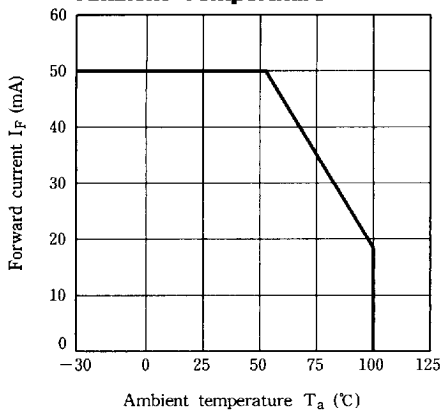
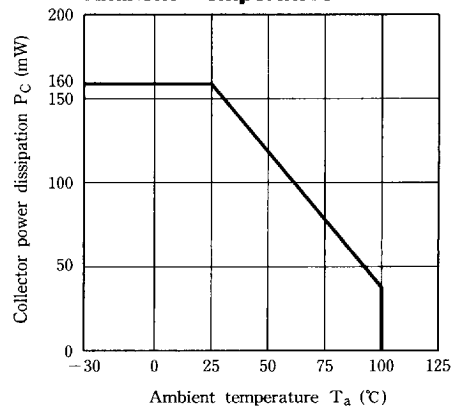
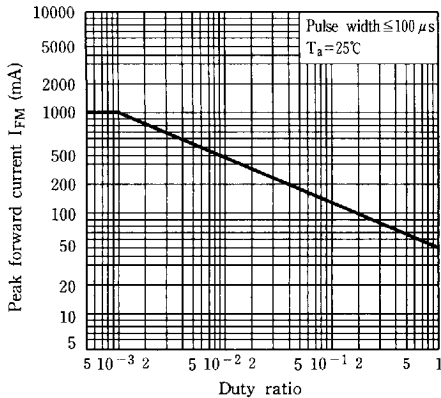
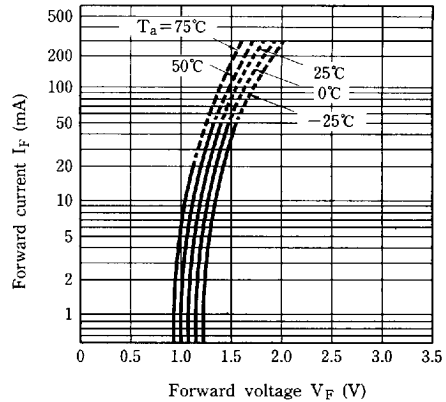
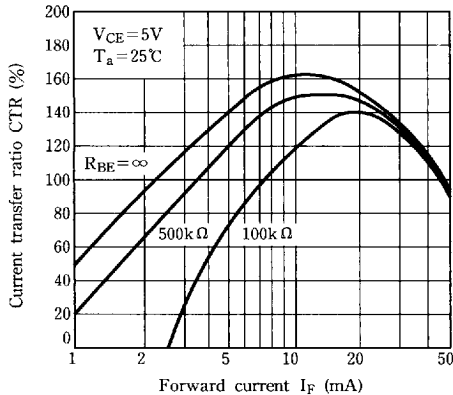
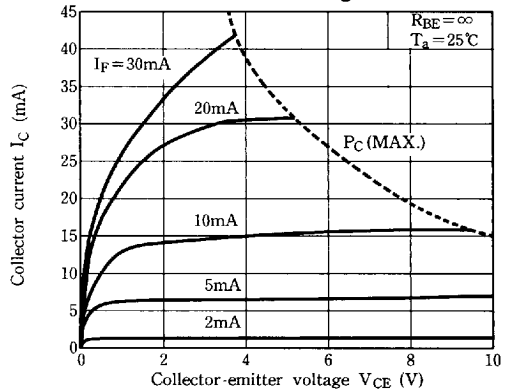
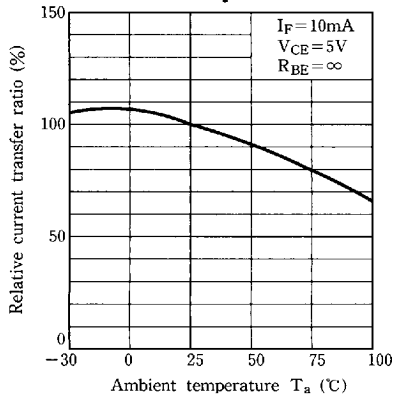
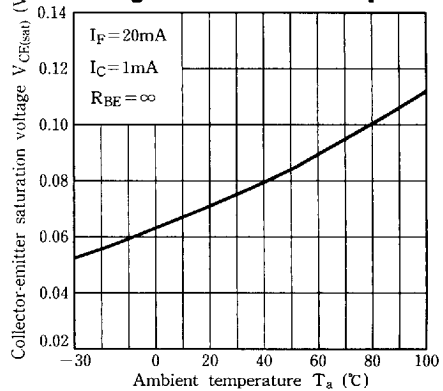
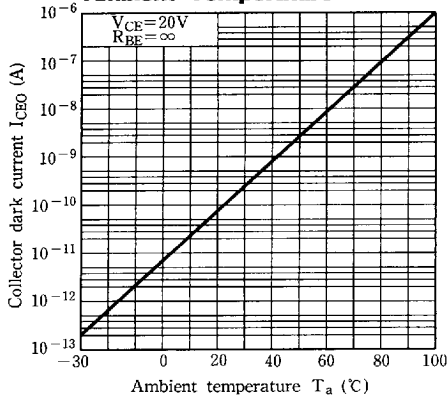
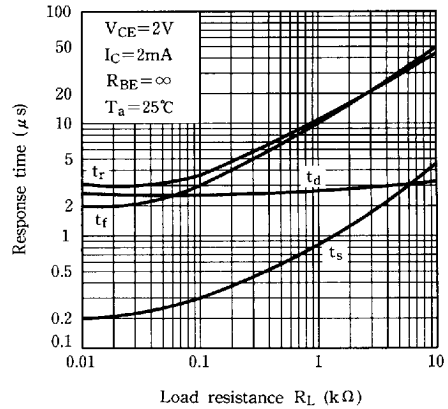
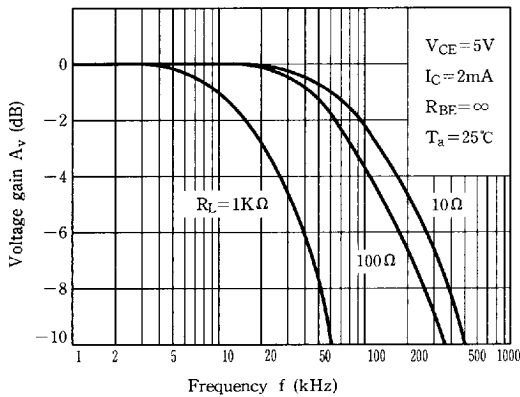
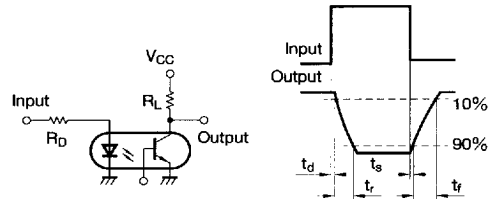
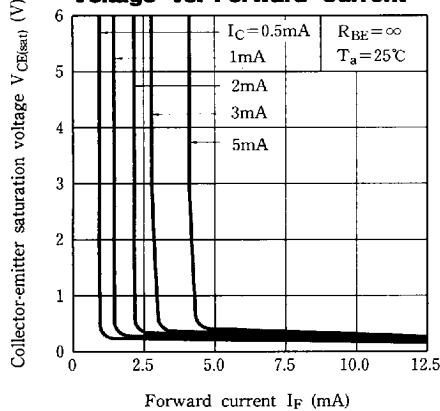
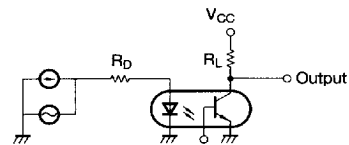


Fig.12 Collector Power Dissipation VS. Ambient Temperature



**Fig. 3 Peak Forward Current vs. Duty Ratio****Fig. 4 Forward Current vs. Forward Voltage****Fig. 5 Current Transfer Ratio vs. Forward Current****Fig. 6 Collector Current vs. Collector-emitter Voltage****Fig. 7 Relative Current Transfer Ratio vs. Ambient Temperature****Fig. 8 Collector-emitter Saturation Voltage vs. Ambient Temperature**

**Fig. 9 Collector Dark Current vs. Ambient Temperature****Fig.10 Response Time vs. Load Resistance****Fig.11 Frequency Response****Test Circuit for Response Time****Fig.12 Collector-emitter Saturation Voltage vs. Forward Current****Test Circuit for Frequency Response**

● Please refer to the chapter  
"Precautions for Use". (Page 78 to 93)